

C. REMARKS

The claims have been amended in order to place the application in better form.

Claims 1, 14, 16, and 21-24 have been cancelled, and Claims 25-35 have been added. The fact that Claims 1, 14, 16, and 21-24 have been cancelled without prejudice is not to be construed as an admission by Applicants or Applicants' attorneys that such claims are not patentable.

In response to the rejection under 35 U.S.C. 112, second paragraph, Claims 7-11 have been amended in accordance with the Examiner's helpful suggestions.

In response to the double patenting rejection under 35 U.S.C. 101, the claims have been amended such that they do not claim the same invention as U.S. Patent No. 6,358,486.

Claims 1, 3-5, 8, 9, and 11-14 stand rejected under 35 U.S.C. 102(e) as being anticipated by Lujano, et al. as evidenced by Carrazza, et al.

Claims 16-22 stand rejected under 35 U.S.C. 102(e) as being anticipated by Lujano, et al.

These rejections are respectfully traversed.

The present invention is directed to processes for producing an inorganic oxide that contains micro- and mesopores. In one embodiment, as defined broadly in Claim 25, the process comprises heating a mixture comprising water, an inorganic oxide, a crystalline zeolite in finely divided form, and at least one compound that binds to the inorganic oxide by hydrogen bonding. The heating is to a temperature and for a time to produce an inorganic oxide that contains both micropores and mesopores.

In another aspect of the present invention, there is provided, as defined broadly in Claim 28, a process for producing an inorganic oxide that contains mesopores and a substantial amount of micropores. The process comprises heating a mixture comprising water, an inorganic oxide, a crystalline zeolite, and at least one compound that binds to the inorganic oxide by hydrogen bonding. The heating is to a temperature below the temperature at which there is substantial formation of mesopores. The at least one compound then is removed at a temperature below the temperature at which there is substantial formation of mesopores to produce an inorganic oxide that contains mesopores and a substantial amount of micropores.

In yet another aspect of the present invention, there is provided, as defined in Claim 27, a product comprising an inorganic oxide and zeolite beta. The product includes mesopores and micropores. The micropores are present in an amount of from 3% to 60%, by pore volume, based on micropores and mesopores.

Lujano discloses crystalline inorganic oxide structures which include mesopores and micropores.

In Lujano, an inorganic oxide in aqueous solution is mixed with an organic compound having tensoactive properties, i.e., a surfactant, and then heated to form a product having micropores and mesopores, or a product having mesopores. The surfactant does not bind to the inorganic oxide by hydrogen bonding. Instead, in Lujano, the surfactant forms micelles and templates the mesopores.

In addition, in preferred embodiments of Applicants' claimed invention, the compound which binds to the inorganic oxide in Applicants' claimed process may be a glycol, such as, for example, glycerol, diethylene glycol, triethylene glycol, and tetraethylene glycol. The surfactants employed by Lujano to form mesopores in the inorganic oxide are not glycols. Such embodiments of Applicants' claimed invention, therefore, are not even remotely suggested to one of ordinary skill in the art by Lujano.

Furthermore, Lujano does not disclose or even remotely suggest to one of ordinary skill in the art a product comprising an inorganic oxide and zeolite beta, wherein the product includes mesopores and micropores, and the micropores are present in an amount of from 3% to 60%, by pore volume, based on micropores and mesopores.

For the above reasons and others, Lujano does not anticipate Applicants' methods and product as claimed, nor does Lujano render Applicants' methods and product as claimed obvious to one of ordinary skill in the art. It is therefore respectfully requested that the rejections under 35 U.S.C. 102(e) be reconsidered and withdrawn.

Claims 16-22 stand rejected under 35 U.S.C. 102(b) as being anticipated by Cooper, et al. This rejection is respectfully traversed.

Cooper discloses the hydrothermal treatment of zeolite Y, in order to increase mesopore volume. The zeolite Y is treated hydrothermally at temperatures above the atmospheric boiling point of the treating solution.

Cooper, which is directed solely to zeolite Y, does not disclose or even remotely suggest to one of ordinary skill in the art a product comprising an inorganic oxide and zeolite beta, wherein the product includes mesopores and micropores, and wherein the micropores are present in an amount of from 3% to 60%, by pore volume, based on micropores and mesopores.

Therefore, for the above reasons and others, Cooper does not anticipate Applicants' product as claimed, nor does Cooper render Applicants' product as claimed obvious to one of ordinary skill in the art. It is therefore respectfully requested that the rejection under 35 U.S.C. 102(b) be reconsidered and withdrawn.

Claims 2, 6, 7, and 10 stand rejected under 35 U.S.C. 103 as being unpatentable over Lujano, et al. and further in view of Winyall. This rejection is respectfully traversed.

As stated hereinabove, Lujano does not even remotely suggest to one of ordinary skill in the art Applicants' claimed processes or Applicants' claimed product.

Winyall discloses a method to produce a high pore volume silica gel. In Winyall, the silica gel is produced by using desolubilizing agents such as sodium sulfate and ammonia. The gel then is neutralized using acids, such as sulfuric acid, or by using carbon dioxide.

In Winyall, however, there is no heating of the silica gel in order to form micropores and mesopores. In Applicants' claimed processes, heating is needed in order to form mesopores and micropores.

Therefore, Winyall, when combined with Lujano, clearly does not even remotely suggest Applicants' claimed processes to one of ordinary skill in the art. Thus, for the above reasons and others, the combination of Lujano and Winyall does not render Applicants' claimed processes obvious to one of ordinary skill in the art, and it is therefore respectfully requested that the rejection under 35 U.S.C. 103 be reconsidered and withdrawn.

For the above reasons and others, this application is in condition for allowance, and it is therefore respectfully requested that the rejections be reconsidered and withdrawn and a favorable action is hereby solicited.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Raymond J. Lillie".

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